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## ELECTRONIC MAIL DISTRIBUTION METHOD AND APPARATUS

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

[0001] The present invention relates to a method and apparatus to distribute  
5 electronic mail via a network.

#### 2. Description of the Related Art

[0002] The Internet enables many users to make private and professional use  
of electronic mail in sending and receiving messages. Electronic mail, or  
e-mail, is communicated between users via a mail server. For example, an  
10 e-mail destined to a "user A" sent from a terminal is transmitted to a Simple Mail  
Transfer Protocol (SMTP) server which contains the software/hardware which  
receives, stores, routes and sends the message. The SMTP server judges  
whether to spool the e-mail or transfer it to another SMTP server, based on  
domain information included in the e-mail address of recipient. This is  
15 determined at the moment when the e-mail is received. In a case where the  
e-mail is to be transferred to another SMTP server, the e-mail is then  
transferred instantaneously. Thus, e-mail is typically sent to the mail server  
handling the e-mail of user A in a very short period of time. "Immediately" would  
be a term to use, except that there are times where the load on a system or a  
20 server is such that the transmission is held up without the desire of the sender.

**[0003]** However, instead of cases where it is desirable that e-mail is sent to a recipient "immediately," there are cases where it is preferred, depending on the content of the e-mail, that the e-mail be received by the recipient at a later time. In other words, a user desires to send an e-mail exactly when the user wishes  
5 the recipient to read it.

### SUMMARY OF THE INVENTION

- [0004]** The present invention has been made in view of the foregoing circumstance, and an object thereof is to provide an electronic mail transmitting technique with high usability and increased convenience.
- 10 **[0005]** An electronic mail distribution apparatus according to the present invention temporarily stores mail whose dispatch date and time are specified in advance, and is structured such that e-mail having a specified date and time is sent out at the specified date/time. Thus, electronic mail reaches a recipient on a desired date or date/time.
- 15 **[0006]** In a preferred embodiment of the present invention, the e-mail distribution system comprises: a receiving unit which receives an e-mail scheduled to be sent to a recipient at a specified date and time; a storage unit which stores the mail received; a detection unit which detects the specified date and time; a retrieval unit which retrieves the mail detected by the detection  
20 unit from the storage unit; and a transmission unit which sends the e-mail retrieved by the retrieval unit.

**[0007]** In another embodiment of the present invention, the electronic mail distribution apparatus may include a confirmation unit which confirms that the specified transmission date and time is set to a time after the current date and time; and, which then stores the e-mail in the storage unit.

- 5 **[0008]** Moreover, the electronic mail distribution apparatus may further comprise a generating unit which generates header information for the electronic mail message as retrieved by the retrieval unit.

**[0009]**

- [0010]** This summary of the invention does not necessarily describe all  
10 necessary features so that the invention may also be sub-combinations of these described features.

#### BRIEF DESCRIPTION OF THE DRAWINGS

- [0011]** Fig. 1 is a block diagram showing an electronic mail distribution system including an electronic mail distribution apparatus according to an  
15 embodiment of the present invention.

**[0012]** Fig. 2 is a functional block diagram of the electronic mail distribution apparatus.

**[0013]** Fig. 3 is a flow chart showing the process sequence to where the electronic mail is stored.

**[0014]** Fig. 4 is a flow chart showing the process where the electronic mail stored in the mail database is sent to a destination client at a specified date and  
5 time.

**[0015]** Fig. 5 is an example of a screen displayed at a display unit of an originating client.

**[0016]** Fig. 6 shows an example of the data structure of the mail database.

**[0017]** Fig. 7 shows an example of electronic mail content with a specified  
10 delivery date and time.

**[0018]** Fig. 8 shows an example of an e-mail of the type shown in Fig. 7 when sent out.

#### DETAILED DESCRIPTION OF THE INVENTION

**[0019]** The invention will now be described based on the preferred  
15 embodiments, which do not intend to limit the scope of the present invention, but exemplify the invention. All of the features and the combinations thereof described in the embodiment are not necessarily essential to the invention.

**[0020]** In a preferred embodiment of this invention, electronic mail or e-mail is first stored so that it can be transmitted at a specified date and time in the future. Thereby, for example, the e-mail distribution apparatus can publish the agenda of a conference days before, or send out an e-mail on the day of a person's birthday, or notify a renewal due date of a membership before the expiration day, and of other related time-sensitive events.

**[0021]** Fig. 1 is a block diagram showing the structure of an electronic mail (e-mail) distribution system 200 including an electronic mail distribution apparatus 100 according to an embodiment of the present invention. The electronic mail distribution apparatus 100 stores e-mail messages sent from an originating user 12 who is a sender of the electronic mail, and sends it to a destination client 14. The e-mail distribution apparatus 100 and the originating user 12 and the destination client 14 are connected to one another via the Internet 10. In the existing prior art, such mail is delivered immediately; any time delay being a result of system configuration, excess traffic and other causes of system overload.

**[0022]** Fig. 2 is a functional block diagram of the e-mail distribution apparatus 100. In terms of hardware components, the e-mail distribution apparatus 100 is usually comprised mainly of and realized by a CPU, a memory and an e-mail distribution program of any of several types of computer. It is to be understood by those skilled in the art that the hardware and software to realize such a structure and system may vary greatly. It is to be noted that

Fig. 2 does not show a hardware-oriented structure but simply a function-oriented block diagram.

**[0023]** A receiving unit 102 receives e-mail having a specified date and time as sent from the originating user 12. The designated date and time may be  
5 attached to the e-mail or sent from the originating user 12 separate from the e-mail itself. A confirmation unit 104 first confirms that the specified date and time is not before the current date and time. If the specified date and time is before the present date and time, the confirmation unit 104 notifies the  
10 originating user 12 to the effect that the specified date and time was wrongly set. Moreover, if the specified date and time is set to after the present date and time, the confirmation unit 104 stores it in a mail database 106 in a manner such that the e-mail is indexed to the specified date and time.

**[0024]** A clock unit 110 provides the present date and time to detection unit 108. Preferably, clock unit 110 provides not only the standard times of a  
15 plurality of countries where the e-mail distribution apparatus 100 are set up, and also the local times of those countries to the detection unit 108. Detection unit 108 compares the standard time or local time provided by the clock unit 110 with the designated date and time entered into the mail database 106 so as to identify and calculate a correspondence between the designated date/time and  
20 the e-mail message specifications. For example, in a case where an electronic mail is to be sent to a friend in the U.S. on his/her birthday, the date and time when the electronic mail is to be sent can be specified in compliance with the

date and local time in the U.S. Detection unit 108 instructs retrieval unit 112 to retrieve the electronic mail whose specified date and time corresponds with current date and time.

[0025] Retrieval unit 112 sends the thus retrieved e-mail to a generating unit 114. Generation unit 114 generates a header portion for the electronic mail. Thereby, a time stamp is put on the electronic mail as if the electronic mail is sent from the originating user 12 on the specified date and time. Transmission unit 116 then sends out the e-mail to the destination client 14.

[0026] Fig. 3 is a flow chart showing the steps covering up to the point where the electronic mail is stored in a mail database 106. The receiving unit 102 receives an e-mail sent from the originating user 12 (S10). The confirmation unit 104 judges whether or not the specified date and time has already passed (S12). When the specified date and time has not passed, the current date and time (YES in S12), the mail database 106 stores the message in a manner such that the e-mail is indexed to the specified date and time. On the other hand, if the specified date and time has already passed the current date and time (NO in S12), the confirmation unit 104 notifies the originating user 12 accordingly (S16), thus preventing any message from being registered. The e-mail distribution apparatus 100 repeats such processes of S10 through S16 every time apparatus 100 receives an electronic mail, and stores it in the mail database 106 in sequence in a manner that information on a single electronic mail is counted as a record or item.

**[0027]** Fig. 4 is a flow chart showing the steps of the process where electronic mail stored in the mail database 106 is sent to the destination client 14 at the designated date and time. Detection unit 108 compares the designated date and time with current date and time provided by the clock unit 110, and thereby judges whether or not the e-mail is eligible to be sent (S20). Retrieval unit 112 retrieves from the mail database 106 the electronic mail whose designated date and time corresponds to the current date and time. Generation unit 114 generates an electronic mail header. Transmission unit 116 sends out the electronic mail to the destination client 14 (S22) if the current date and time corresponds to the specified date and time (YES in S20). On the other hand, if the current date and time does not yet correspond to the specified date and time in the step S20 (NO in S20), detection unit 108 checks the next record stored in the mail database 106 (S24). These processes are performed on each record in the order starting from the first record through the last record stored in the mail database 106. When the process is completed on the last record, the process recycles beginning at the first record.

**[0028]** In the above evaluation process, the time required for judgment on the first through last records increases as the number of the records increases. For example, in a case where the electronic mail is evaluated to be sent only if in the detection unit 108 the current date and time coincides with the designated date and time only for a specific second, there might be e-mail unsent which should have been sent. Here, however, the detection unit 108 preferably



evaluates that any record whose specified date and time is after the current date and time is regarded as an e-mail to be sent out.

**[0029]** Moreover, in order that an e-mail can reach a mail server of the destination at the specified date and time, the detection unit 108 may determine  
5 that the due date and time to be sent to the server is slightly before the actual designated date and time of delivery.

**[0030]** Fig. 5 is an example of an e-mail screen or form displayed on a display unit of an originating user 12. This form is displayed at an e-mail recipient end as a Web page. Transmission date input field 28 is the area in  
10 which the desired date and time are input. Though the specified date only is input as shown in Fig. 5, the time of day may be specified as well. A country selection field 30 calculates the standard time or local time for each country used in the detection unit 108. For example, if you wish to send out e-mail on November 15, 2000 U.S. time, "2000/11/15" is inputted in the transmission date  
15 field 28, and "U.S." is specified in the country selection field 30. SEND button 32 instructs the e-mail distribution apparatus 100 to dispatch the electronic mail containing the content input in this form.

**[0031]** When the user clicks on the SEND button 32, the originating user 12 sends out the content input in the input boxes to the e-mail distribution  
20 apparatus 100 via Hyper Text Transfer Protocol (HTTP). The e-mail distribution apparatus 100 stores the received content in the mail database 106.

**[0032]** Fig. 6 shows an example of the data structure of the mail database 106. This database 106 includes a designated date-time column 40, a country column 42, a recipient column 44, a sender column 46 and a body column 48. The designated date-time column 40 holds the date and time of the e-mail to be sent. In an example shown in Fig. 6, the e-mail to "bbb@xyz.com" scheduled to be sent on November 15, 2000. Mail database 106 may store a plurality of records with single information on each e-mail regarded as a record.

**[0033]** The present invention has been described based on the embodiments which are only exemplary. It is understood by those skilled in the art that there exists other various modifications to each component and the combination of each processing described and that such modifications are encompassed by the scope of the present invention. Some such modifications include the following:

#### Modifications

**[0034]** In a case where the transmission date and time of the electronic mail is specified by the conventional electronic mail client software, the user may implement a scheme in which the specified date and time are included in the body of the electronic mail. Fig. 7 shows an example of an electronic mail containing a designated date and time. The specified date and time are entered using a designated date-time tag 58. A portion enclosed by a tag <DATE> and a tag </DATE> indicates the specified date and time. The receiving unit 102 reads the specified date and time based on the tag which indicates the specified

date and time in the body of the electronic mail. When the receiving unit 102 reads out the specified date and time, the receiving unit 102 supplies it to the confirmation unit 104. The confirmation unit 104 stores it in the mail database 106 in a manner such that the specified date and time is associated  
5 with the electronic mail. In this mode, the date/time and the electronic mail are stored as an integrated unit of information, the date/time associated with the electronic mail.

**[0035]** When the electronic mail stored in the mail database 106 is sent out, the generating unit 114 changes the time stamp of the electronic mail header  
10 and the specified date and time entered in the body is deleted. Fig. 8 shows an example of electronic mail shown in Fig. 7 as sent out. The time stamps 54 and 56 shown in Fig. 7 are changed to time stamps 50 and 52 bearing the date of November 15, 2000. Moreover, the specified date-time tag is deleted.  
According to this scheme, the user can specify a date and time of the electronic  
15 mail to be sent, by using the conventionally available electronic mail client software.

**[0036]** In the above embodiments, for each electronic mail to be sent, the specified date and time is compared to the current date and time. However, a plurality of e-mail messages may be sorted out in the order starting from one  
20 bearing the earliest date and time specified. In that case, it suffices to check the time on a single electronic mail whose specified date and time comes first.

**[0037]**

**[0038]** Although the present invention has been described by way of exemplary embodiments, it should be understood that many changes and substitutions may be made by those skilled in the art without departing from the spirit and scope of the present invention which is defined by the appended claims.

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